REMARKS

Reconsideration and allowance are respectfully requested.

Claims 1-59 are pending.

Claims 4, 11, 34-56, 58 and 59 stand rejected under 35 USC § 112, second paragraph.

Claims 4, 11, 18, 44, 48 and 52 have been amended to overcome the § 112 issues.

With respect to claim 34, the "nozzle control command" corresponds to the "nozzle position command" of, for instance, steps 130 and 134 of Fig. 7. The "nozzle control apparatus command" corresponds to the "stick position command" of step 134 of Fig. 7. For clarity, "nozzle control command" has been changed to "nozzle position command" and "nozzle control apparatus command" has been changed to "nozzle position apparatus command" throughout claims 34-43. Nozzle position apparatus command has been used to encompass not only a stick type of controller but also other types of steering controls. See the paragraph bridging pages 16 and 17. As is discussed in the specification at pages 16-18 and shown in Fig. 7, in the method for controlling roll out of a watercraft of claim 34, only under certain circumstances is the nozzle position command the same as the nozzle position apparatus command (stick position command). Under other circumstances, the nozzle position command is not the same as the nozzle position apparatus command (stick position command) but is different to control roll-out of the watercraft.

In view of the above, it is respectfully requested that the § 112 rejections be withdrawn.

Claims 1-5, 13 and 57 stand rejected under 35 USC § 103(a) as being unpatentable over Ford in view of McKenney.

Applicant respectfully traverses the rejection of claim 1.

Claim 1 currently requires:

1. (Currently Amended) A method for controlling a~~the~~ heading of a watercraft, comprising:
acquiring a desired heading of the watercraft;
acquiring an actual heading of the watercraft at time T_0;
calculating a heading error by comparing the desired heading with the actual heading;
determining a rate of change of the heading error:
determining a plurality of algorithm gains, based on the heading error and the heading error rate ~~used~~, to control at least one of an~~the~~ amount and rate of a deflection of a nozzle of the watercraft for use in maintaining the heading of the watercraft;
determining a value for a nozzle control signal by taking into account each determined algorithm gain;
determining an amount of deflection for a nozzle of the watercraft, for altering a heading of the watercraft, based on the value for the nozzle control signal;
deflecting the nozzle based on the determined amount of deflection;
repeating the above steps until the actual heading equals the desired heading.

Thus, claim 1 requires:

1) calculating a heading error;

2) calculating a heading error rate;

3) determining a plurality of algorithm gains, based on the heading error and the heading error rate, to control at least one of an amount and rate of a deflection of a nozzle of the watercraft for use in maintaining the heading of the watercraft; and

4) determining a value for a nozzle control signal by taking into account each determined algorithm gain;

Neither Ford nor McKenney, alone or in combination, teach or suggest such a method.

Ford does not teach or suggest determining a plurality of algorithm gains, based on the heading error and the heading error rate, to control at least one of an amount and rate of a deflection of a nozzle of the watercraft for use in maintaining the heading of the watercraft and then determining a value for a nozzle control signal by taking into account each determined algorithm gain. The Examiner cites to Ford, col. 6, lines 20-44 for "determining algorithm gains". However, the algorithms disclosed there are merely used to determine the yaw rate: "Microprocessor 97 performs the above-described sampling and digitizing functions and executes multiplying steps 148 and 150 and a summing step 152 on the digitized data to calculate an estimated yaw rate based on the following equations:" (emphasis added). Thus, the Ford algorithms are used to calculate an estimated yaw rate; they are not "based on the heading error and the heading error rate". Nor does Ford teach or suggest then "determining a value for a nozzle control signal by taking into account each determined algorithm gain." Therefore, Ford does not teach or suggest amended

claim 1. McKenney is cited merely for teaching a method for controlling a heading having a rear steerable propulsion device and a bow thruster. McKenney does not teach or suggest the above noted steps of claim 1 and does not cure the deficiencies of Ford.

For these reasons, Ford and McKenney do not anticipate or render obvious claim 1, or any of the claims depending therefrom, and it is respectfully requested that this rejection be withdrawn.

Claims 14-16, 18, 19, 23, 24 and 26-28 stand rejected under 35 USC § 102(b) as being anticipated by Braddon.

Applicant respectfully traverses this rejection. No amendment has been made to claim 14 to distinguish over Braddon.

Claim 14 requires acquiring a heading from the heading sensor and also acquiring a heading turn rate from an angular rate of turn sensor. Those values are combined at step 42 to become the new calculated heading if and only if the previously acquired heading turn rate was greater than a threshold value (step 36). If the previously acquired heading turn rate is below the threshold, the heading from the heading sensor and the heading turn rate are not combined and a new heading is acquired again from the heading sensor. See page 11, lines 3-17.

Braddon, on the other hand, always combines the yaw rate from transmitter 21 with the heading from transmitter 19 in the heading integrator 29. See Braddon, col. 2, lines 46-56. For this reason, Braddon does not anticipate or render obvious claim 14, or

any of the claims depending therefrom and it is respectfully requested that this rejection be withdrawn.

Claims 29-32 stand rejected under 335 USC § 102(b) as being anticipated by Wesner.

Claim 29 has been amended slightly to define the type of disturbance that affects the output of the heading sensor. Amended claim 29 requires:

> 29. A method for correcting a heading of a watercraft, comprising:
> measuring an amount of error induced by the effect of at least one of a magnetic, electrical and vibration/shock disturbance on at least one of x, y and z heading data from a heading sensor;
> acquiring at least one of x, y and z heading data from a heading sensor;
> determining whether the at least one disturbance is occurring;
> correcting the heading data in the occurrence of a disturbance by adding a correction value to the heading that offsets the measured amount of error induced by the disturbance;
> outputting the corrected heading data for control of the heading of the watercraft.

Wesner does not disclose or suggest claim 29. Wesner discloses using a "heading error signal" for correcting a heading error of a vessel. Such heading error signal is based on an error between a desired heading and an actual heading caused by yawing of the vessel in high seas. See Wesner, col. 1, lines 10-28. It does not relate to a magnetic, electrical or vibration/shock disturbance which induces error into the heading data output from a heading sensor. Such disturbance can happen in calm seas but result in the heading sensor outputting erroneous heading date. Nor does Wesner

determine "whether the at least one disturbance is occurring" for "correcting the heading data in the occurrence of a disturbance by adding a correction value to the heading that offsets the measured amount of error induced by the disturbance" and "outputting the corrected heading data for control of the heading of the watercraft." For these reasons, Wesner does not anticipate or render obvious claim 29, or any of the claims depending therefrom and it is respectfully requested that this rejection be withdrawn.

Claims 44-51, 58 and 59 stand rejected under 335 USC § 102(b) as being anticipated by McKenney '642.

Applicant respectfully traverses the rejection of independent claim 44. No amendment has been made to claim 44 to distinguish over McKenney. Claim 44 requires (emphasis added):

> 44. A method for controlling a watercraft having a rear propulsion device and a thruster, comprising:
> during at least one of initiation and cessation of sideways movement of the watercraft by engagement/disengagement of the thruster, prepositioning an angle of the rear propulsion device to provide a sideways force that minimizes vessel yaw prior to the occurrence of a heading error, the prepositioned angle based on operating characteristics of the watercraft.

McKenney simply does not teach or suggest claim 44. The Examiner refers to McKenney, col. 2, lines 45-46 in support of his position. Respectfully, this reliance is misplaced. The referenced statement makes clear that McKenney merely reacts to a directional error of the vessel caused by using the thruster. That is, the thruster is

turned on, a directional error is noted, and the nozzle is rotated an appropriate amount to account for the already occurring error. See McKenney, col. 7, lines 27-38 where it specifically states that the McKenney autopilot 32 "chases" the bow. McKenney fails to teach or suggest the proactive method of claim 1 of "prepositioning an angle of the rear propulsion device to provide a sideways force that minimizes vessel yaw prior to the occurrence of a heading error" or that "the prepositioned angle [is] based on operating characteristics of the watercraft" as opposed to measurement of the error that has already occurred, as taught by McKenney. Claim 44 teaches a method that prevents error, a far more advantageous approach than McKenney, which only teaches a method to compensate for, or "chase", an error that has already occurred. For these reasons, McKenney does not anticipate or render obvious claim 44, or any of the claims depending therefrom and it is respectfully requested that this rejection be withdrawn.

Applicant respectfully traverses the rejection of independent claim 48. No amendment has been made to claim 48 to distinguish over McKenney. Claim 48 requires (emphasis added):

> 48. A method for controlling a watercraft having a rear propulsion device and a thruster, comprising:
>
> initiating a sideways movement of the watercraft by engaging the rear propulsion device while delaying engagement of the thruster;
>
> engaging the thruster after a first predetermined time delay to assist in the sideways movement of the watercraft after a stern of the watercraft has gained sideways momentum from the rear propulsion

device, the first predetermined time delay based on operating characteristics of the watercraft to minimize yaw of the watercraft during the sideways movement.

As with claim 44, McKenney simply does not teach or suggest claim 48. The Examiner references McKenney as teaching 1) "initiating a sideways movement of said watercraft by engaging a rear propulsion unit" and 2) "engaging a thruster after engaging said rear propulsion unit to assist in sideways movement of said watercraft." Applicant agrees with statement 1 by the Examiner. However, such statement clearly ignores the remainder of the claim limitation of "initiating a sideways movement of the watercraft by engaging the rear propulsion device while delaying engagement of the thruster". In fact, McKenney teaches the exact opposite, as discussed above, where the nozzle (propulsion device) is rotated after the thruster is turned on to correct a directional error of the vessel caused by using the thruster. Thus, the McKenney does not delay "engagement of the thruster" while "initiating a sideways movement of the watercraft by engaging the rear propulsion device". For the same reasons as given above, Applicant respectfully disagrees with statement 2). McKenney simply does not teach or suggest "engaging the thruster after a first predetermined time delay to assist in the sideways movement of the watercraft after a stern of the watercraft has gained sideways momentum from the rear propulsion device, the first predetermined time delay based on operating characteristics of the watercraft to minimize yaw of the watercraft during the sideways movement." Again,

McKenney only teaches reacting to a directional error of the vessel caused by using the thruster prior to the rear propulsion device. See McKenney, col. 7, lines 27-38 where it specifically states that the McKenney autopilot 32, using the nozzles, "chases" the bow, already put in motion by the thruster. For these reasons, McKenney does not anticipate or render obvious claim 48, or any of the claims depending therefrom and it is respectfully requested that this rejection be withdrawn.

Claims 34-43 have been indicated as being allowable over the prior art.

Claims 52-56 have been indicated as being allowable over the prior art.

In view of the above, it is believed that the application is in condition for allowance and such a Notice is respectfully requested. If anything else is needed to place the application in condition for allowance, it is kindly requested that the undersigned be contacted.

Respectfully submitted,

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